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21 October 2019

Mr. Kenneth Shewmake
Task Order Monitor
U.S. Environmental Protection Agency (EPA)
1201 Elm Street, Suite 500
Dallas, Texas, 75270-2102

RE: Addendum 01 Sampling and Analysis Plan for Remedial Investigation, Revision 00
Lane Plating Works, Inc. Superfund Site
U.S. Environmental Protection Agency Region 6
Remedial Action Contract 2
Task Order: 68HE0618F0309
Contract: EP-W-06-004

Dear Mr. Shewmake:

EA Engineering, Science, and Technology, Inc., PBC (EA) is enclosing one hard copy and one electronic copy on compact disc (CD) of the Addendum 01 Sampling and Analysis Plan for Remedial Investigation, Revision 00 for the above-referenced Task Order. As requested, one electronic copy (on CD) is also being distributed to Mr. Scott Settemeyer, Texas Commission on Environmental Quality (TCEQ) Project Manager. An electronic copy of this deliverable was also submitted via email on 21 October 2019.

Please do not hesitate to contact me at (972) 315-3922 if you have any questions.

Sincerely,

Mark Paddack
Project Manager

Enclosure

cc: Brian Delaney, EPA Contract Officer (letter only)
Scott Settemeyer, TCEQ Superfund Section Project Manager (one electronic copy on CD)
Tim Startz, EA Program Manager (letter only)
File

TRANSMITTAL OF DOCUMENTS FOR ACCEPTANCE BY EPA		DATE: **21 October 2019**	TRANSMITTAL NO.: **0013**
TO: **Mr. Kenneth Shewmake** **U.S. Environmental Protection Agency Region 6**		FROM: **Mark Paddack** **EA Engineering, Science, and Technology, Inc., PBC**	
SUBTASK NO.	DELIVERABLE	NO. OF COPIES	
1.2	Addendum 01 Sampling and Analysis Plan for Remedial Investigation , Revision 00 Lane Plating Works, Inc. Superfund Site Dallas, Dallas County Texas	EPA: 1 Hard Copy; 1 Electronic Copies on Compact Disc (CD) TCEQ: 1 Electronic Copy on CD	
ACCEPTANCE ACTION			
DOCUMENTS FOUND ACCEPTABLE (LIST BY SUBTASK NO.)		NAME/TITLE/SIGNATURE OF REVIEWER DATE	

Addendum 01
Sampling and Analysis Plan for
Remedial Investigation

Lane Plating Works, Inc. Superfund Site
Dallas, Dallas County, Texas
EPA Identification No. TXN000605240

Remedial Action Contract 2 Full Service
Contract No.: EP-W-06-004
Task Order No.: 68HE0618F0309

Prepared for

U.S. Environmental Protection Agency
Region 6
1201 Elm Street, Suite 500
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Revision: 00
EA Project No. 14342.168

Addendum 01
Sampling and Analysis Plan for
Remedial Investigation

Lane Plating Works, Inc. Superfund Site
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Remedial Action Contract 2 Full Service
Contract No.: EP-W-06-004
Task Order No.: 68HE0618F0309

21 October 2019

Tim Startz
EA Program Manager

Date

21 October 2019

Frank Barranco, P.E., P.G., PhD (EA)

Date

Kenneth Shewmake
U.S. Environmental Protection Agency Region 6 Task Order Monitor

Date

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APPENDIX A: PHASE 2 RI SAMPLING DESIGN MATRIX

REVISED LIST OF ACRONYMS AND ABBREVIATIONS

°C	Degrees Celsius
AVS	Acid volatile sulfide
bgs	Below ground surface
CLP	Contract Laboratory Program
COPCs	Contaminants of potential concern
DOC	Dissolved organic carbon
DPT	Direct-Push Technology
EA	EA Engineering, Science, and Technology, Inc., PBC
EPA	U.S. Environmental Protection Agency
ft	Feet (foot)
H_2SO_4	Sulfuric acid
HCl	Hydrochloric acid
HDPE	High-density polyethylene
HNO_3	Nitric acid
HSA	Hollow-stem auger
IDW	Investigation-derived waste
in.	Inch(es)
ml	Milliliter
NH_4OH	Ammonium hydroxide
NaOH	Sodium hydroxide
N&E	Nature and extent
ORP	Oxidation-reduction potential
PFC	Perfluorinated compound
psi	Pounds per square in.
PVC	Polyvinyl chloride
QC	Quality control
RI	Remedial Investigation
SAP	Sampling and Analysis Plan

SEM	Simultaneously extracted metal
site	Lane Plating Works, Inc. Superfund Site
SM	Standard method
SOP	Standard operating procedure
TAC	Texas Administrative Code
TAL	Target analyte list
TCLP	Toxicity Characteristic Leaching Procedure
TDS	Total dissolved solid
TOC	Total organic carbon
TSS	Total suspended solid

1. ADDENDUM STRUCTURE

EA Engineering, Science, and Technology, Inc., PBC (EA) has been authorized by the U.S. Environmental Protection Agency (EPA), under Remedial Action Contract No. EP-W-06-004, Task Order No. 68HE0618F0309, to conduct the Remedial Investigation (RI) at the Lane Plating Works, Inc. Superfund Site (site), located in Dallas, Dallas County, Texas. EA has prepared this Addendum 01 to the Sampling and Analysis Plan (SAP), in accordance with 40 Code of Federal Regulations 300.415(b)(4)(ii), and guidance received from EPA and the Texas Commission on Environmental Quality.

The SAP (EA 2019) presents the standard procedures for conducting each of the tasks anticipated to be needed to complete the RI. The RI sampling activities are being performed in an iterative approach so that each phase of the investigation builds on the results of the previous phase. The initial phase of RI sampling (Phase 1) included: (1) installation of three perched zone groundwater monitoring wells, and (2) collection of surface soil samples, subsurface soil samples, sediment samples, surface water samples, and groundwater samples for laboratory analysis. The results from the samples have been used to verify if contaminants of potential concern (COPCs) are present at the site, as well as the adjacent surface drainage system that is situated south and east of the site. The major Phase 2 RI sampling activities, which are covered under this addendum, will be used to: (1) better characterize the potential source associated with the main structure situated at the site, (2) address nature and extent (N&E) data gaps for soil and groundwater based on evaluation of the historical data and Phase 1 RI data, (3) perform background soil and sediment, and surface water investigations to determine if a portion of the COPCs are site-related, or if they are related to anthropogenic/naturally-occurring background conditions, and (4) collect additional surface water samples from Phase 1 surface water locations in order to develop a site-specific screening level for aluminum in surface water.

Addendum 01 revises certain sections of the SAP document and adds specific information pertaining to Phase 2 activities if it differs from the SAP used to complete the Phase 1 RI sampling program (EA 2019). The following sections are revised as shown.

1.2.3 Project Sampling Approach

The overall project goals will continue to be achieved using an iterative, phased sampling approach, as presented in the SAP (EA 2019). The specific goals of the Phase 2 sampling event and primary activities that will be performed during this work phase are included in the attached Phase 2 RI Sampling Design Matrix (Appendix A).

The Phase 2 RI sampling event will include installation, development, and sampling of additional groundwater monitoring wells, including two monitoring wells that will be installed into the upper portion of the Austin Chalk, which was determined to lie relatively shallow in the immediate area surrounding the former site structures. Installation and sampling of additional soil borings, and collection of soil samples from these locations, will also occur in order to address N&E data gaps identified by the Phase 1 data. Background soil samples will also be collected from soil borings that will be installed at an offsite location northeast of the site, which

is undeveloped, topographically upgradient from the site, and is composed of the same soil type that underlies much of the site. Additional sediment and surface water samples will also be collected from Stream 5A2 and the unnamed stream, which are located east and south of the site, respectively. These sediment and surface water samples will be collected in upstream segments of these drainage features so that the data can be used to evaluate anthropogenic/background conditions for upstream sediment and surface water in the surface water features, and compare the Phase 2 RI sediment results to the Phase 1 RI sediment and surface water sample results. Additional surface water samples will also be collected within the footprint of the Phase 1 surface water collection area in order to derive a site-specific aluminum screening level criterion for the aluminum detections in the Phase 1 surface water samples.

2.1 SAMPLING PROCESS DESIGN

Addendum 01 incorporates Sampling Design Matrix for the Phase II field event. The sampling design matrix for Phase II has been amended and is included as Appendix A. This appendix contains the Phase 2 proposed sample locations for groundwater (Table A-1 and Figure A-1), soil samples (Table A-2 and Figures A-2 and A-3), sediment (Table A-3 and Figure A-4), and surface water (Table A-4 and Figure A-5).

Section 2.1 changes included in this addendum are as follows:

> ***Groundwater Sampling***—EA will collect groundwater samples from existing monitoring wells installed during the Phase 1 RI field event (MW-01, MW-02, and MW-03) and the existing onsite hand-dug water wells (WW-01 and WW-02). New monitoring wells installed during the Phase 2 RI field event will also be sampled per the same protocols and Standard Operating Procedures (SOPs) provided in the SAP (EA 2019). Figure A-1 (Appendix A) illustrates the proposed locations where groundwater samples will be collected. As indicated on Table A-2 (Appendix A), the analyte list for groundwater samples will be reduced to total and dissolved target analyte list (TAL) metals, hexavalent chromium, and perfluorinated compounds (PFCs).
>
> ***Soil Sampling***—During the Phase 2 RI field event, EA will collect additional surface and subsurface soil samples per the same protocols and SOPs provided in the SAP (EA 2019). The soil samples will include N&E samples to address data gaps identified at the site based on historical and Phase 1 RI soil data, as well as completing a background surface soil and subsurface soil investigation. Figures A-2 and A-3 (Appendix A) illustrate the proposed locations of the N&E soil samples and background soil sample locations, respectively. As indicated on Table A-2 (Appendix A), the analyte list for N&E soil samples will be reduced to TAL metals and hexavalent chromium, with a subset of the samples (10 percent) being analyzed for oxidation-reduction potential (ORP) and pH in order to assist in the preparation of the risk assessments. A portion of the soil samples collected along the south footprint of the main building will also be analyzed for PFCs to determine if these compounds exceed screening values in soil situated near footprint of this building. For the background investigation, the collected

soil samples will be analyzed for TAL metals and hexavalent chromium (Table A-2, Appendix A).

Sediment Sampling—During the Phase 2 RI field event, EA will conduct a background sediment investigation by collecting sediment samples in upstream segments of Stream 5A2 and the unnamed stream, which are located east and south of the site, respectively. Figure A-4 (Appendix A) illustrates the proposed locations of these background sediment samples. These data will be used to evaluate anthropogenic/background conditions for upstream sediment in these surface water features and will be used as a comparison to the Phase 1 RI sediment results when performing the risk assessments. As indicated on Table A-3 (Appendix A), these background sediment samples will be analyzed for TAL metals and hexavalent chromium, with one sediment sample from each of the two upstream segments also being analyzed for acid volatile sulfide/simultaneously extracted metals (AVS-SEM), ORP, pH, and total organic carbon (TOC) in order to assist in the preparation of the risk assessments.

Surface Water Sampling—During the Phase 2 RI field event, EA will conduct a background surface water investigation by collecting surface water samples in upstream segments of Stream 5A2 and the unnamed stream, which are located east and south of the site, respectively. Figure A-5 (Appendix A) illustrates the proposed locations of these background surface water samples; they will be co-located with the background sediment sample locations. These data will be used to evaluate anthropogenic/background conditions for upstream conditions in theses surface water features and compare the Phase 2 RI surface water results to the Phase 1 RI surface water results when performing the risk assessments. Surface water parameters will be collected, and the background surface water samples will be analyzed for TAL metals and hexavalent chromium, with one background surface water sample from Stream 5A2 also being analyzed for hardness, total dissolved solids (TDS), total suspended solids (TSS), alkalinity, TOC, and dissolved organic carbon (DOC) in order to assist the risk assessors in preparing the risk assessments.

In addition, surface water parameters and surface water samples will be collected for DOC analysis from four of the Phase 1 surface water sample locations (LSW-1, LSW-6, LSW-9, and LSW-14). These results will be used in conjunction with the Phase 1 surface water results to develop a site-specific screening level for the aluminum detected in the Phase 1 surface water samples.

Table 4 has been revised to describe the required sample volume, containers, preservatives, and holding times for the Phase 2 RI sample analyses.

TABLE 4 ANALYTICAL PROGRAM AND METHODS

Parameter	Method	Volume and Container	Preservatives	Holding Time
GROUNDWATER AND/OR SURFACE WATER				
Alkalinity (Bicarbonate/ Carbonate)	SM 2320B	1 x 250-ml HDPE bottle	Store at <6°C (4±2°C)	14 days
Hardness	EPA Method 130.2/ SM 2340C	1 x 100-ml HDPE bottle	HNO_3 to pH ≤ 2; Store at <6°C (4+2°C)	180 days
Hexavalent Chromium	EPA Method 218.6	1 x 125-ml HDPE bottle	NH_4OH (pH>9); Store at <6°C (4±2°C)	14 days
Metals (including mercury)	CLP ISM02.4/ EPA SW6010C/6020A/ 7470A	1 x 1-Liter HDPE bottle	HNO_3 to pH ≤ 2; Store at <6°C (4±2°C)	180 days (28 days for mercury)
PFCs	EPA Method 537(M) Isotope Dilution	2 x 250 ml HDPE bottles	Store at <6°C (4±2°C)	14 days
TDS	SM 2540C	1 x 1-liter HDPE bottle	Store at <6°C (4±2°C)	7 days
TSS	SM 2540D	1 x 1-liter HDPE bottle	Store at <6°C (4±2°C)	7 days
TOC	SM 5310C	1 x 250-ml glass bottle	H_2SO_4 to pH <2; Store at <6°C (4±2°C)	28 days
DOC	SM 5310	2 x 40-ml vials	Store at <6°C (4±2°C)	28 days
SOIL AND/OR SEDIMENT				
AVS/SEM	EPA 821/R-91-100/ EPA SW6010C/ SW9034	1 x 8-ounce amber glass jar (filled to capacity)	Store at <6°C (4±2°C)	14 days
Hexavalent Chromium	EPA SW3060A/ 7199	1 x 8-ounce glass jar with Teflon™-lined cap	Store at <6°C (4±2°C)	30 days
Metals (including mercury)	CLP ISM02.4/ EPA SW6010C/6020A/ 7471B	1 x 8-ounce glass jar with Teflon™-lined cap	Store at <6°C (4±2°C)	180 days (28 days for mercury)
ORP	ASTM Method D1498	1 x 4-oz glass jar	Store <6 C (4±2°C)	14 days
PFCs	EPA Method 537(M) Isotope Dilution	1 x 8-oz HDPE jar	Store at <6°C (4±2°C)	28 days
pH	EPA SW9045D	1 x 8-ounce glass jar with Teflon™-lined cap	Store at <6°C (4±2°C	Analyze upon receipt
TOC	EPA SW9060A	1 x 8-ounce amber glass jar with Teflon™- lined cap	Store at <6°C (4±2°C)	28 days

Parameter	Method	Volume and Container	Preservatives	Holding Time
INVESTIGATION-DERIVED WASTE SOIL AND WATER				
Reactivity (Cyanide and Sulfide)-Water	EPA SW-846 Chapter 7/ SW9012B/ SW9034	1-Liter HDPE bottle	NaOH to pH>12; Zinc acetate and NaOH to pH>12; Store at <6°C (4±2°C);	14 days/ 7 days
Corrosivity (pH)-Soil	EPA SW9045D	1 x 8-ounce glass jar with Teflon™-lined cap	Store at <6°C (4±2°C)	Analyze upon receipt
Corrosivity (pH)-Water	EPA SW9040C	1 x 125-ml bottle	Store at <6°C (4±2°C)	Analyze upon receipt
Ignitability - Soil	EPA SW-846 Chapter 7/ SW1030	1 x 8-ounce glass jar with Teflon™-lined cap	Store at <6°C (4±2°C)	14 days
Ignitability - Water	EPA SW-846 Chapter 7/ EPA SW1010A	1 x 250-ml glass bottle	Store at <6°C (4±2°C)	14 days
Total Petroleum Hydrocarbons	TX Method 1005	One 8-oz glass jar (soil); 3 x 40-ml amber glass vials, 24-ml neck finish (water)	Store at <6°C (4±2°C) (solid); HCl to pH<2, Store at <6°C (4±2°C) (liquid)	14 days
TCLP Metals	EPA SW1311/6010C/ 7470A	1 x 8-ounce glass jar with Teflon™-lined cap (solid); 1 x 1-Liter HDPE container (liquid)	Store at <6°C (4±2°C) (solid); HNO_3 to pH<2 Store at <6°C (4±2°C) (liquid)	180 days (28 days for mercury)
TCLP Semivolatile Organic Compounds	EPA SW1311/8270D	1 x 8-ounce glass jar with Teflon™-lined cap (solid); 1 x 1-Liter amber glass container (liquid)	Store at <6°C (4±2°C)	14 days
TCLP Volatile Organic Compounds	EPA SW1311/ 8260C	1 x 8-ounce glass jar with Teflon™-lined cap (solid); 3 x 40-ml vials (liquid)	Store at <6°C (4±2°C) (solid); HCl to pH<2 Store at <6°C (4±2°C) (liquid)	14 days

NOTES:
Holding time is shown as the time from sample collection to the time of sample extraction/time from sample extraction to analysis (as appropriate).

°C = Degrees Celsius.
AVS/SEM = Acid volatile sulfide/simultaneously extracted metals.
CLP = Contract Laboratory Program.
DOC = Dissolved organic carbon.
EPA = U.S. Environmental Protection Agency.
HCl = Hydrochloric acid.
HDPE = High-density polyethylene.
HNO_3 = Nitric acid.
H_2SO_4 = Sulfuric acid.
ml = Milliliter.
NaOH = Sodium hydroxide.
NH_4OH = Ammonium hydroxide.
ORP = Oxidation–reduction potential.
PFC = Perfluorinated compounds.
SM = Standard method.
TCLP = Toxicity Characteristic Leaching Procedure.
TDS = Total dissolved solids.
TOC = Total organic carbon.
TSS = Total suspended solids.

2.3 SAMPLING METHODOLOGY

The SOPs that will be employed during the Phase 2 RI field event are the same as those included in Appendix C of the SAP (EA 2019).

2.3.1 Ground Water Sampling

During the Phase 2 RI field event, EA will be collecting groundwater samples from the two existing onsite hand-dug water wells, the three monitoring wells installed as part of the Phase 1 RI field event, and the new monitoring wells that are proposed for the Phase 2 RI event. The Sampling Design Matrix for groundwater samples (Figure A-1 and Table A-1, Appendix A) summarizes the locations of the proposed well locations where groundwater samples will be collected, and the analyses that will be performed for the collected samples, respectively. Groundwater samples collected for dissolved metals will be field-filtered using 0.45-micron disposable filters. The wells will be sampled using low-flow sampling methods (SOP 048, Appendix C of the SAP [EA 2019]). PFC sampling requires special handling and will be performed using EA SOP 073 (Appendix C of the SAP [EA 2019]), which documents proper sampling procedures.

Table A-1 and Figure A-1 (Appendix A) contains pertinent information for the Phase 2 RI Groundwater Sampling Design Matrix. Table 4 identifies the analytical methods and associated information such as sample containers, preservatives, and hold times for each method. If submitted to a private laboratory, an EPA or other industry standard analytical method will be used by that laboratory. The number of quality control (QC) samples to be collected will be in accordance with the requirements set forth in this SAP and are summarized in Table 7 of the SAP (EA 2019).

2.3.1.1 Water Supply Well Sampling

The two onsite hand-dug water wells will be sampled as part of the Phase 2 RI field activities. Due to the wells being unused and depth to groundwater being relatively shallow, these wells will be sampled using the same sampling techniques for monitoring well sampling described below in Section 2.3.1.2.

2.3.1.2 Monitoring Well Sampling

EA will purge and collect groundwater samples from monitoring wells using low-flow (i.e., micropurge using a submersible or peristaltic pump) sampling methodology (SOP 048, Appendix C of the SAP [EA 2019]). Low-flow sampling requires that minimal drawdown is maintained throughout purging of the well to ensure that the water being purged is in fact entering the pump from the formation, and not as a result of lowering water levels within the well. Water level measurements will be collected periodically to confirm that drawdown is not occurring in accordance with SOP No. 010 (Appendix C of the SAP [EA 2019]). Geochemical parameters will be monitored and logged using a calibrated water quality meter. Groundwater will continue to be purged until measurements of temperature and conductivity have stabilized to

within 10 percent, and pH has stabilized to within 0.1 pH unit. Other parameters will be monitored and recorded during purging, including turbidity and ORP, but will not be used as stabilizing criteria. Measurement of field parameters is further described in SOP Nos. 008, 009, 012, 036, 037, 038, and 048 (Appendix C of the SAP [EA 2019]). Field parameters will be recorded on field forms provided in Appendix E of the SAP (EA 2019).

2.3.2 Soil Investigation

2.3.2.1 Soil Borings

Additional soil borings will be installed, and soil samples collected using either direct-push technology (DPT) (SOP 047, Appendix C of the SAP [EA 2019]), hollow-stem auger (HSA) drilling and sampling methods, or by use of hand augers. DPT and HSA drilling will be performed by licensed drillers. During the Phase 2 RI field activities, the N&E soil borings will be installed and sampled to a total depth of 15 feet (ft) below ground surface (bgs), or to refusal, whatever is encountered first. In the case of the background soil investigation soil borings, they will be installed to target depths of 5 ft bgs. The surface soil only sample locations will be installed to target depths of 2 ft bgs.

During drilling, continuous soil cores will be collected. If using DPT, the soil core will be collected using clear polyvinyl chloride (PVC) or acetate sleeves; two cores located adjacent to each other may be required at each soil boring location in order to obtain a sufficient volume of soil for laboratory analyses. If soil borings are advanced using HSA, the borings will be sampled continuously using split spoon sampler or a five-foot core barrel that is decontaminated between uses. In the event an area is not accessible for a DPT or HSA rig, a hand auger may also be used to collect shallow soil samples. A field geologist will log the material types within each core to assist in the understanding of site geology and for the N&E of contamination. Soil borings will be logged on standard boring log forms (Appendix E of SAP [EA 2019]) using the Unified Soil Classification System methodology. This data will be recorded on the boring log form.

Soil samples will be collected for laboratory analyses following SOP 25 (Appendix C of the SAP [EA 2019]). These samples will be utilized for conducting a background soil investigation and, further N&E characterization of the surface and subsurface soil at the site.

Table A-2 and Figures A-2 and A-3 (Appendix A) contain pertinent information for the Phase 2 RI Soil Sampling Design Matrix. Table 4 identifies the analytical methods and associated information such as sample containers, preservatives, and hold times for each method. If submitted to a private laboratory, an EPA or other industry standard analytical method will be used by that laboratory. The number of QC samples to be collected will be in accordance with the requirements set forth in Table 7 of the SAP (EA 2019).

Following completion of sampling activities, soil borings will be abandoned in accordance with SOP 028 (Appendix C of the SAP [EA 2019]).

2.3.3 Monitoring Well Installation

EA will supervise subcontractor installation, development, and surface completion of additional monitoring wells during the Phase 2 field event. The locations of the proposed wells have been selected based on data for the two onsite hand-dug water wells and the three Phase 1 RI monitoring wells. During installation of the three Phase 1 RI monitoring wells, it was determined that the Austin Chalk is relatively shallow beneath much of the site, and a shallow, perched groundwater zone exists on top of the Austin Chalk. During the Phase 2 RI field event, six additional perched zone monitoring wells and two Austin Chalk monitoring wells will be installed. The well boreholes will be drilled following SOP 019 (Appendix C of SAP [EA 2019]) and soil samples collected following SOP 25 (Appendix C of SAP [EA 2019]) using HSA drilling methods for the perched zone monitoring wells.

The anticipated perched zone monitoring well design is installation to the depth of refusal, or a maximum depth of 10 ft below the apparent groundwater interface, whichever occurs first. If refusal does not occur, upon encountering the apparent groundwater interface, the well borehole will be advanced 10 ft below this zone, and the well will be completed in such a way that it is screened across the groundwater interface. This will prevent possible vertical migration of COPCs to deeper units and allow for seasonal fluctuations of groundwater within the screened interval of the monitoring wells.

In the case of the two Austin Chalk monitoring wells, HSA drilling methods will be used to advance the boreholes to the top of the Austin Chalk. The boreholes will be of sufficient diameter to allow surface casing to be installed that will accommodate smaller diameter drill stem to advance boreholes into the Austin Chalk that will accommodate 2 inch (in.) monitoring wells. Once the surface casing has been set into the top of the Austin Chalk, the bottom of the borehole and annulus outside the surface casing will be grouted to form a seal and prevent groundwater from the perched groundwater zone to migrate downward by way of the well borehole. Once the seal has cured, smaller diameter drill stem will be used to advance into the upper portion of the Austin Chalk, to a target depth of approximately 30 ft bgs.

The soil samples collected for laboratory analyses will be utilized for further N&E characterization of the subsurface, further delineation of contamination, and the potential for contribution to groundwater contamination.

Appendix A contains the Sampling Design Matrix for soil samples collected from the monitoring well boreholes (Table A-2 and Figures A-2 and A-3). Table 4 identifies the analytical methods and associated information such as sample containers, preservatives, and hold times for each method. If submitted to a private laboratory, an EPA or other industry standard analytical method will be used by that laboratory. The number of QC samples to be collected will be in accordance with the requirements set forth in Table 7 of the SAP (EA 2019).

2.3.3.1 Monitoring Well Borehole Advancement

Underground utilities clearance will be performed, and necessary permits will be obtained prior to borehole drilling commencement. Before initiating drilling, the down-hole equipment, rig, and other equipment (as necessary) will be steam-cleaned or high-pressure washed, followed by a pressurized rinse with potable water to minimize the potential for cross contamination. Special attention should be given to the threaded section of the casings and to the drill rods. Cleaned equipment will not be handled with soiled gloves. Drilling equipment will be steam-cleaned or high-pressure washed at the completion of the project to ensure that no contamination is transported offsite. Decontamination of the equipment will follow general practices listed in SOP Nos. 005 and 019 (Appendix C of SAP [EA 2019]). Water derived from decontamination will be collected and temporarily stored at the staging area for characterization.

All soil borings drilled will be continuously monitored. Lithologic logs will be prepared by examining the drill cuttings. Soil classifications will follow American Society for Testing and Materials International D2488-90 as provided in SOP No. 019 (Appendix C of SAP [EA 2019].

Once the borehole is advanced to close proximity of the anticipated top of the water table, the site geologist will direct the driller to slow the rate of advancement, and the retrieved soil cores will be used to identify the apparent groundwater interface. Boreholes will be advanced to target depths relative to the water table and wells constructed so that they are screened across the apparent groundwater interface and do not create a potential conduit to underlying units. Sampling, field screening, and logging shall continue to total depth of each borehole.

2.3.3.2 Monitoring Well Construction

Conventional monitoring well construction will be performed by a Texas-licensed well driller. Administrative requirements will be completed by the driller in accordance with rules and regulations as described in Texas Administrative Code (TAC) Title 16, Part 4, Chapter 76 (Water Well Drillers and Water Well Pump Installers Rules); TAC Title 30, Part 1, Chapter 330, Subchapter J (Groundwater Monitoring and Corrective Action); as well as rules and regulations prescribed by local authorities.

The perched zone monitoring wells will be installed using HSA drilling methods for shallow wells. Well construction methods are described in SOP No. 019 (Appendix C of the SAP [EA 2019]). After the estimated top of the saturated zone is identified by the site geologist, the well bore will be deepened to a depth of no more than 10 ft below this interval, or auger refusal, whichever occurs first. Boring/well construction logs will be recorded on field forms provided in Appendix E. The monitoring wells will be constructed using 2 in. PVC well casing and screen. It is currently anticipated that the Phase 2 RI well design for the monitoring wells will include 5 to 15 ft of well screen, with the remainder of each monitoring well being constructed with riser. Lengths of well screen and riser may be adjusted, based on field conditions encountered.

2.3.3.3 Surface Completions

Depending on their location, newly-installed monitoring wells will be constructed with either flush-mount or stickup surface completions. The flush-mounted surface completions will consist of 8-in. to 12-in. diameter traffic-rated vaults set in 4-ft by 4-ft by 6-in.-thick concrete pads consisting of 4,000 pounds per square in. (psi)-rated concrete mix (Sackrete No. 10360 or equivalent, mixed to manufacturer's specifications) with a mat of No. 3 rebar on 12-in. centers. Concrete pads will slope away from the vault cover such that the vault cover elevation is 0.5 in. higher than the edges of the pad to allow for drainage of precipitation. A water-tight locking cap will be installed on each monitoring well.

For the stickup surface completions, a minimum 5 ft. protective casing (well monument) of either corrosion- resistant material or painted with weather resistant paint shall be placed around the well. Approximately 2 ft of protective casing will extend below grade, with 3 ft extending above grade. The protective casing will have a locking cap and be designed to prevent the entrance of unauthorized personnel, rain, dust, or insects from entry, and threaded hole and drain plug at the base of the exposed portion of the casing, immediately above the top of the grout column. A concrete surface slab will surround the protective well casing and shall consist of 4,000 psi-rated concrete mix (Sackrete No. 10360 or equivalent, mixed to manufacturer's specification). The concrete pad will extend at least 2 ft from the well in all directions, be a minimum of 6 in. thick with #3 rebar placed on 8 in. centers and be sloped to drain away from the well. Protective posts, constructed of 6 in. diameter steel, shall be placed at all corners of the surface slab. Protective posts will be placed in 12 in. diameter boreholes, extend into the ground a minimum of 2 ft, and extend above grade a minimum of 3 ft. Posts will be placed in a 2 ft concrete foundation and filled with concrete. The posts will be of sufficient strength to prevent vehicular damage to the well. Posts and protective casing will be yellow in color. Well heads will be capped with a locking vented cap.

2.3.3.4 Well Development

Monitoring wells will be developed following the completion of each well. The wells will be allowed to set 48 hours prior to initiating development. Downhole equipment, including surge blocks and/or pumps, will be decontaminated before first use at the site as well as in between wells. Water derived from decontamination will be collected and temporarily stored at the staging area for characterization.

Monitoring wells will be developed by surging and bailing, followed by pumping in accordance with SOP No. 019 (Appendix C of SAP [EA 2019]). This process will continue until the wells yield relatively sediment-free groundwater and field parameters have stabilized. Well development records will be documented on field forms provided in Appendix E of the SAP (EA 2019).

2.3.4 Surface Water and Sediment Sampling

Surface water and sediment sampling activities will occur during the Phase 2 RI field activities. These samples will include background investigation sample locations (surface water and sediment), and additional surface water samples at a portion of the Phase 1 RI surface water sample locations. To the extent possible, background surface water samples will be co-located with background sediment sample locations. In the event surface water is not present at a sediment location, the surface water sample may be re-located to another area where only a surface water sample will be collected.

The background sediment and surface water samples will be collected in upstream segments of Stream 5A2 and the unnamed stream, which are located east and south of the site, respectively. The purpose of these samples will be to evaluate anthropogenic/background conditions for upstream sediment and surface water in the surface water features and compare the Phase 2 RI sediment results to the Phase 1 RI sediment and surface water sample results. The additional surface water samples collected within the footprint of the Phase 1 surface water collection area will be used to derive a site-specific aluminum screening level criterion for the Phase 1 RI aluminum detections in surface water.

Table A-3 and Figure A-4 (Appendix A) contain pertinent information for the Phase 2 RI Sediment Sampling Design Matrix, while Table A-4 and Figure A-5 present the Sampling Design Matrix for surface water. Table 4 identifies the analytical methods and associated information such as sample containers, preservatives, and hold times for each method. If submitted to a private laboratory, an EPA or other industry standard analytical method will be used by that laboratory. The number of QC samples to be collected will be in accordance with the requirements set forth in Table 7 of the SAP (EA 2019).

2.3.4.1 Surface Water Sampling Methodology

Surface water samples will be collected directly into the sample containers in accordance with EA SOP 007 (Appendix C of the SAP [EA 2019]). An alternative sampling method involves pumping water from the sample location through dedicated Teflon™-lined polyethylene tubing using a peristaltic pump; the intake of the sample tubing will be placed 6 in. below the surface of the water. Surface water samples collected for dissolved metals will be field-filtered using 0.45-micron disposable filters. PFC sampling requires special handling and will be performed using EA SOP 073 (Appendix C of the SAP [EA 2019]), which documents proper sampling procedures. Field parameters collected during surface water sample collection may include surface water flow rate, water temperature, pH, conductivity, TDS, ORP, and turbidity. Field forms are included in Appendix E of the SAP (EA 2019). Coordinates for the sample locations will be obtained after sampling using a handheld global positioning system device. Sample locations may be adjusted based on existing field conditions.

2.3.4.2 Sediment Sampling Methodology

Sediment samples will be collected using sediment core samplers with disposable sleeves or laboratory-grade disposable scoops, in accordance with SOP 021 (Appendix C of the SAP [EA 2019]). AVS-SEM sediment sample containers will be completely filled to minimize head space. Field forms are included in Appendix E of the SAP (EA 2019). Coordinates for the sample locations will be obtained after sampling using a handheld global positioning system device. Sample locations may be adjusted based on existing field conditions.

2.3.4.3 Surface Water and Sediment Sampling Program

The Phase 2 surface water and sediment samples will be collected from each location using the following methodology and in accordance with the U.S. Geological Survey's *National Field Manual for the Collection of Water-Quality Data* (USGS 2014):

1. Collocated surface water/sediment pairs will be collected from each location, unless otherwise specified above.

2. All sediment samples will be collected from 0.0–0.5 ft bgs.

3. All surface water samples will be collected from 0.0–0.5 ft or shallower below the water surface; due to the flow in the creek and tributaries, the mixing of the water column deems this sampling depth representative.

4. All surface water and sediment samples will be collected from each location at the same time while moving upstream from the confluences. This manner of sampling will ensure that the water and sediment at the upstream sampling locations are not disturbed due to ongoing sample collection occurring downstream.

5. Locations of the drainages from former potential sources of contamination will be verified. Surface soil and sediment samples will be collected from the points of confluence of the streams with these drainage pathways.

It is anticipated that, depending on the time of year, some surface drainage features may not contain surface water. If completely dry, only the sediment samples will be collected as per the strategy outlined above. If the bodies of water are dry, the sediment samples collected will also be evaluated for exposure as the surface soil exposure medium. If there is water ponding in the intermittent streams, collocated ponded water and sediment will be collected from available locations, but at a frequency of not more than one sample every 200 ft.

2.3.5 Sample Container, Volume, Preservation, and Holding Time Requirements

The required sample volume, container type, preservation technique, and holding time for each analysis to be conducted for samples are presented in Table 4. Required containers, preservation techniques, and holding times for field QC samples are the same as for field samples.

2.3.6 Decontamination

Decontamination of the equipment will follow general practices listed in SOP No. 005 (Appendix C of the SAP [EA 2019]). Cleaned equipment will not be handled with soiled gloves. All water derived from decontamination will be collected and temporarily stored at the staging area established by EA for characterization.

2.3.7 Investigation-Derived Waste

Appendix A contains the Sampling Design Matrix for investigation-derived waste (IDW) samples. EA will incorporate best management practices for green remediation as it relates to the management of IDW. IDW will be characterized and managed in accordance with local, state, and federal laws, as applicable.

Soil will be drummed, sealed, labeled, and stored at the designated staging area until profiled for acceptance at an approved disposal facility (SOP No. 042, Appendix C of the SAP [EA 2019]). IDW soil samples will be submitted to an EA-subcontracted laboratory for disposal characterization. Landfill Disposal Restrictions will dictate sample quantities and analysis.

Water generated during well installation, groundwater sampling, aquifer testing, and equipment decontamination will be drummed, sealed, labeled, and stored at the designated staging area until profiled for acceptance at an approved disposal facility (SOP No. 042, Appendix C of the SAP [EA 2019]). IDW water samples will be submitted to an EA-subcontracted laboratory for disposal characterization.

All IDW will be handled and disposed of in accordance with applicable regulations and requirements.

2.3.8 Sample Designation

Each sampling location will be designated with a unique alphanumeric designation according to the following sample classifications:

- ***Soil Samples*** – Phase 2 soil sample designation will include three fields separated by dashes. For example: JSB-9-0.5-2.0. The first field, "JSB-9" identifies the sample type and number. The alpha characters are the designation for type of sample: Soil ("JSB" = judgmental soil boring; SS = surface soil sample, and BSB = background investigation soil boring). Soil samples collected from monitor well borings will keep the alpha characters associated with the well ("MW" for permanent perched zone monitoring wells, and "ACMW" for Austin Chalk monitoring wells). The first numerical character "0.5" represents the top of the sample interval measured in ft. bgs and the third field, "2.0" represents the bottom of the sample interval measured in ft bgs.

- ***Groundwater Samples*** – Groundwater samples will first be identified based on the type of well. Samples collected from monitor wells will have a designation of "MW", samples collected from hand-dug water wells will have a designation of "WW", and groundwater samples collected from the Austin Chalk wells will have a designation of "ACMW".

  — Monitor well groundwater sample designations will include two fields separated by a dash. For example: MW-03. The two alpha characters in the first field, "MW" identify the sample as having been collected from a monitoring well. The second field, "03," represents the numerical designation for the monitor well number.

  — Hand-dug water well groundwater sample designations will include two fields separated by a dash. For example: WW-01. The two alpha characters in the first field, "WW" identify the sample as having been collected from a water well. The second field, "01," represents the numerical designation for a generic water well number assigned to each well sampled.

- ***Surface Water Samples*** – The surface water sample designation will include two fields separated by a dash. For example: LSW-01. The three alpha characters in the first field, "LSW" identify the sample as a Lane surface water (LSW) sample; in the case of the background surface water locations, these samples will have a "BLSW" designation. The second field, "01" represents the numerical designation of the surface water sample.

- ***Sediment Samples*** – The surface water sample designation will include two fields separated by a dash. For example: LSE-01. The three alpha characters in the first field, "LSE" identify the sample as a Lane sediment (LSED) sample; in the case of the background sediment locations, these samples will have a "BLSED" designation. The second field, "01" represents the numerical designation of the sediment sample.

REFERENCES

EA Engineering, Science, and Technology, Inc., PBC (EA). 2019. *Sampling and Analysis Plan for Remedial Investigation, Lane Plating Works, Inc. Superfund Site, Dallas, Dallas County, Texas.* March.

U.S. Geological Survey (USGS). 2014. *National Field Manual for the Collection of Water-Quality Data, Chapter A2, Selection of Equipment for Water Sampling.* Reston, VA.

Appendix A

Phase 2 RI Sampling Design Matrix

Table A-1: Sampling Design Matrix - Phase 2 Remedial Investigation
Groundwater Sampling

Sample Location	Sample Identification	Sampling Method	Analyses				
			Field Parameters	Total (Unfiltered) TAL Metals (includes Mercury)	Dissolved (Filtered) TAL Metals (includes Mercury)	[1]Hexavalent Chromium	[1]PFCs
CMT and Monitoring Wells							
MW-01	MW-01	Micro Purge and Sample	1	1	1	1	1
MW-02	MW-02	Micro Purge and Sample	1	1	1	1	1
MW-03	MW-03	Micro Purge and Sample	1	1	1	1	1
MW-04	MW-04	Micro Purge and Sample	1	1	1	1	1
MW-05	MW-05	Micro Purge and Sample	1	1	1	1	1
MW-06	MW-06	Micro Purge and Sample	1	1	1	1	1
MW-07	MW-07	Micro Purge and Sample	1	1	1	1	1
MW-08	MW-08	Micro Purge and Sample	1	1	1	1	1
MW-09	MW-09	Micro Purge and Sample	1	1	1	1	1
ACMW-01	ACMW-01	Micro Purge and Sample	1	1	1	1	1
ACMW-02	ACMW-02	Micro Purge and Sample	1	1	1	1	1
		Subtotal Monitoring Wells	**11**	**11**	**11**	**11**	**11**
		Total Groundwater Samples	**11**	**11**	**11**	**11**	**11**
Ground Water QC Samples							
Field duplicates	Same as original with "-D" added to the ID, for example MW-16-D	1 per 10 samples		1	1	1	1
MS/MSDs	Same as original sample identification	1 per 20 samples (extra volume consisting of one container for MS and one container for MSD per each MS/MSD sample)		1	1	1	1
Field blanks	FB with sequential number; for example FB-1, FB-2, etc.	1 per cooler containing aqueous samples for PFC analysis					3
Equipment blanks	ER with number; for example ER-1, ER-2, etc.	1 per day per set of for nondedicated equipment per team		3	3	3	3
Total Groundwater Samples Including QC			**11**	**16**	**16**	**16**	**19**

NOTES:
Field parameters: pH, temperature, conductivity, dissolved oxygen, oxidation-reduction potential, and turbidity
[1] Hexavalent chromium and PFC analyses for groundwater samples will be conducted by a private laboratory.

FB = Field Blank
MS = Matrix spike
MSD = Matrix spike duplicate
QC = Quality control
PFCs = Perfluorochemicals
TAL = Target analyte list

Objective of Sampling - To verify whether or not contaminants of potential concern are present within the alluvial groundwater, and to define the nature and extent of groundwater impact.

Activities to be Conducted - The tasks of this field investigation that will be performed during Phase 2 include: (1) Collection of groundwater samples from the newly installed groundwater monitoring wells, and (2) Collect groundwater samples from existing onsite water wells and Phase 1 monitoring wells.

Sample Locations - See Figure A-1 in Appendix A of the Sampling and Analysis Plan

N

0 50 100

Feet

Legend

- Existing On-Site Water Well
- Phase 1 Perched Zone Monitoring Well
- Proposed Phase 2 Austin Chalk Monitoring Well
- Proposed Phase 2 Perched Zone Monitoring Well
- Stream
- Stream Seasonal
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Barbed Wire Fence - fair to poor
- Chainlink
- Gate
- Approximate Site Boundary

Imagery Source:
Site:Texas Orthoimagery
Program 2015 0.5 Meter DOQQ,
Texas Strategic Mapping Program, 2015.

Lane Plating Works, Inc. Superfund Site
Dallas, Dallas County, Texas

Figure A-1
Proposed Phase 2 Remedial Investigation Groundwater Sample Locations

2018-10-17 R:\Federal\EPA\R6\D162-Lane RI-FS 305\GIS\MXD\SAP\Figure A-1_pm.mxd EA-Dallas jbarnett

Table A-2: Sampling Design Matrix - Phase 2 Remedial investigation
Soil Sampling

Sample Location	Boring Total Depth (ft bgs)	Sample Medium	Rationale	Nunber of Sample Locations	Sample Identification	Sampling Tool	[1]Sampling Depth (ft bgs)	Analysis				
								TAL Metals (includes Mercury)	[2]Hexavalent Chromium	[2]PFCs	[2]ORP	[2]pH
Soil Borings (Surface Soil and Subsurface Soil)												
JSB- 5	15 (or refusal)	Surface soil	To delineate nature and extent	1	JSB-5-0.0-0.5	Split spoon Continuous sampler PVC/acetate sleeve, 5 ft core barrel, or hand auger	0.0 - 0.5	1	1			
				1	JSB-5-0.5-2.0		0.5 - 2.0	1	1			
		Subsurface soil		1	JSB-5-2.0-5.0		2.0 - 5.0	1	1		1	1
				1	JSB-5-5.0-10.0		5.0 - 10.0	1	1			
				1	JSB-5-XX-XX		Total Depth of 15 ft. or Refusal	1	1			
JSB- 6	15 (or refusal)	Surface soil		1	JSB-6-0.0-0.5		0.0 - 0.5	1	1			
				1	JSB-6-0.5-2.0		0.5 - 2.0	1	1			
		Subsurface soil		1	JSB-6-2.0-5.0		2.0 - 5.0	1	1			
				1	JSB-6-5.0-10.0		5.0 - 10.0	1	1			
				1	JSB-6-XX-XX		Total Depth of 15 ft. or Refusal	1	1			
JSB- 7	15 (or refusal)	Surface soil		1	JSB-7-0.0-0.5		0.0 - 0.5	1	1			
				1	JSB-7-0.5-2.0		0.5 - 2.0	1	1		1	1
		Subsurface soil		1	JSB-7-2.0-5.0		2.0 - 5.0	1	1			
				1	JSB-7-5.0-10.0		5.0 - 10.0	1	1			
				1	JSB-7-XX-XX		Total Depth of 15 ft. or Refusal	1	1			
JSB- 8	15 (or refusal)	Surface soil		1	JSB-8-0.0-0.5		0.0 - 0.5	1	1			
				1	JSB-8-0.5-2.0		0.5 - 2.0	1	1			
		Subsurface soil		1	JSB-8-2.0-5.0		2.0 - 5.0	1	1			
				1	JSB-8-5.0-10.0		5.0 - 10.0	1	1			
				1	JSB-8-XX-XX		Total Depth of 15 ft. or Refusal	1	1			
JSB- 9	15 (or refusal)	Surface soil		1	JSB-9-0.0-0.5		0.0 - 0.5	1	1		1	1
				1	JSB-9-0.5-2.0		0.5 - 2.0	1	1			
		Subsurface soil		1	JSB-9-2.0-5.0		2.0 - 5.0	1	1			
				1	JSB-9-5.0-10.0		5.0 - 10.0	1	1			
				1	JSB-9-XX-XX		Total Depth of 15 ft. or Refusal	1	1			
JSB- 10	15 (or refusal)	Surface soil		1	JSB-10-0.0-0.5		0.0 - 0.5	1	1		1	1
				1	JSB-10-0.5-2.0		0.5 - 2.0	1	1			
		Subsurface soil		1	JSB-10-2.0-5.0		2.0 - 5.0	1	1			
				1	JSB-10-5.0-10.0		5.0 - 10.0	1	1			
				1	JSB-10-XX-XX		Total Depth of 15 ft. or Refusal	1	1			
JSB- 11	15 (or refusal)	Surface soil		1	JSB-11-0.0-0.5		0.0 - 0.5	1	1		1	1
				1	JSB-11-0.5-2.0		0.5 - 2.0	1	1	1		
		Subsurface soil		1	JSB-11-2.0-5.0		2.0 - 5.0	1	1	1		
				1	JSB-11-5.0-10.0		5.0 - 10.0	1	1	1		
				1	JSB-11-XX-XX		Total Depth of 15 ft. or Refusal	1	1	1		

Table A-2: Sampling Design Matrix - Phase 2 Remedial investigation
Soil Sampling

Sample Location	Boring Total Depth (ft bgs)	Sample Medium	Rationale	Nunber of Sample Locations	Sample Identification	Sampling Tool	[1]Sampling Depth (ft bgs)	Analysis				
								TAL Metals (includes Mercury)	[2]Hexavalent Chromium	[2]PFCs	[2]ORP	[2]pH
SS- 1	2	Surface soil	To delineate nature and extent	1	SS-1-0.0-0.5	Split spoon Continuous sampler PVC/acetate sleeve, 5 ft core barrel, or hand auger	0.0 - 0.5	1	1			
				1	SS-1-0.5-2.0		0.5 - 2.0	1	1			
SS- 2	2	Surface soil		1	SS-2-0.0-0.5		0.0 - 0.5	1	1			
				1	SS-2-0.5-2.0		0.5 - 2.0	1	1			
SS- 3	2	Surface soil		1	SS-3-0.0-0.5		0.0 - 0.5	1	1			
				1	SS-3-0.5-2.0		0.5 - 2.0	1	1			
SS- 4	2	Surface soil		1	SS-4-0.0-0.5		0.0 - 0.5	1	1			
				1	SS-4-0.5-2.0		0.5 - 2.0	1	1		1	1
SS- 5	2	Surface soil		1	SS-5-0.0-0.5		0.0 - 0.5	1	1			
				1	SS-5-0.5-2.0		0.5 - 2.0	1	1			
SS- 6	2	Surface soil		1	SS-6-0.0-0.5		0.0 - 0.5	1	1			
				1	SS-6-0.5-2.0		0.5 - 2.0	1	1			
SS- 7	2	Surface soil		1	SS-7-0.0-0.5		0.0 - 0.5	1	1			
				1	SS-7-0.5-2.0		0.5 - 2.0	1	1			
BSB- 1	5	Surface soil	Site-Specific Background Surface Soil and Subsurface Soil Investigation	1	BSB-1-0.0-0.5		0.0 - 0.5	1	1			
				1	BSB-1-0.5-2.0		0.5 - 2.0	1	1			
		Subsurface soil		1	BSB-1-2.0-5.0		2.0 - 5.0	1	1		1	1
BSB- 2	5	Surface soil		1	BSB-2-0.0-0.5		0.0 - 0.5	1	1			
				1	BSB-2-0.5-2.0		0.5 - 2.0	1	1			
		Subsurface soil		1	BSB-2-2.0-5.0		2.0 - 5.0	1	1			
BSB- 3	5	Surface soil	Site-Specific Background Surface Soil and Subsurface Soil Investigation	1	BSB-3-0.0-0.5	Split spoon Continuous sampler PVC/acetate sleeve, 5 ft core barrel, or hand auger	0.0 - 0.5	1	1			
				1	BSB-3-0.5-2.0		0.5 - 2.0	1	1			
		Subsurface soil		1	BSB-3-2.0-5.0		2.0 - 5.0	1	1			
BSB- 4	5	Surface soil		1	BSB-4-0.0-0.5		0.0 - 0.5	1	1			
				1	BSB-4-0.5-2.0		0.5 - 2.0	1	1			
		Subsurface soil		1	BSB-4-2.0-5.0		2.0 - 5.0	1	1		1	1
BSB- 5	5	Surface soil		1	BSB-5-0.0-0.5		0.0 - 0.5	1	1			
				1	BSB-5-0.5-2.0		0.5 - 2.0	1	1			
		Subsurface soil		1	BSB-5-2.0-5.0		2.0 - 5.0	1	1			
BSB- 6	5	Surface soil		1	BSB-6-0.0-0.5		0.0 - 0.5	1	1			
				1	BSB-6-0.5-2.0		0.5 - 2.0	1	1			
		Subsurface soil		1	BSB-6-2.0-5.0		2.0 - 5.0	1	1			
BSB- 7	5	Surface soil		1	BSB-7-0.0-0.5		0.0 - 0.5	1	1			
				1	BSB-7-0.5-2.0		0.5 - 2.0	1	1			
		Subsurface soil		1	BSB-7-2.0-5.0		2.0 - 5.0	1	1			
BSB- 8	5	Surface soil		1	BSB-8-0.0-0.5		0.0 - 0.5	1	1			
				1	BSB-8-0.5-2.0		0.5 - 2.0	1	1			
		Subsurface soil		1	BSB-8-2.0-5.0		2.0 - 5.0	1	1			
							Soil Borings Soil Sample Subtotal	**73**	**73**	**4**	**8**	**8**

Table A-2: Sampling Design Matrix - Phase 2 Remedial investigation
Soil Sampling

Sample Location	Boring Total Depth (ft bgs)	Sample Medium	Rationale	Nunber of Sample Locations	Sample Identification	Sampling Tool	[1]Sampling Depth (ft bgs)	Analysis				
								TAL Metals (includes Mercury)	[2]Hexavalent Chromium	[2]PFCs	[2]ORP	[2]pH
Monitoring Wells												
MW- 4	30 (or refusal; if no refusal, 10 feet into apparent groundwater interface)	Surface soil	To assess nature and extent	1	MW-4-0.0-0.5	Hollow stem auger with 5 ft core barrel	0.0 - 0.5	1	1			
				1	MW-4-0.5-2.0		0.5 - 2.0	1	1			
		Subsurface soil			MW-4-2.0-5.0		2.0 - 5.0	1	1		1	1
					MW-4-5.0-10.0		5.0-10	1	1			
				1	MW-4-XX-XX		[1]Interval representative of total depth if not encountered above 10 feet	1	1			
MW- 5	30 (or refusal; if no refusal, 10 feet into apparent groundwater interface)	Surface soil		1	MW-5-0.0-0.5	Hollow stem auger with 5 ft core barrel	0.0 - 0.5	1	1			
				1	MW-5-0.5-2.0		0.5 - 2.0	1	1			
		Subsurface soil			MW-5-2.0-5.0		2.0 - 5.0	1	1			
					MW-5-5.0-10.0		5.0-10	1	1			
				1	MW-5-XX-XX		[1]Interval representative of total depth if not encountered above 10 feet	1	1			
MW- 6	30 (or refusal; if no refusal, 10 feet into apparent groundwater interface)	Surface soil		1	MW-6-0.0-0.5	Hollow stem auger with 5 ft core barrel	0.0 - 0.5	1	1			
				1	MW-6-0.5-2.0		0.5 - 2.0	1	1		1	1
		Subsurface soil			MW-6-2.0-5.0		2.0 - 5.0	1	1			
					MW-6-5.0-10.0		5.0-10	1	1			
				1	MW-6-XX-XX		[1]Interval representative of total depth if not encountered above 10 feet	1	1			
MW- 7	30 (or refusal; if no refusal, 10 feet into apparent groundwater interface)	Surface soil		1	MW-7-0.0-0.5	Hollow stem auger with 5 ft core barrel	0.0 - 0.5	1	1			
				1	MW-7-0.5-2.0		0.5 - 2.0	1	1			
		Subsurface soil			MW-7-2.0-5.0		2.0 - 5.0	1	1			
					MW-7-5.0-10.0		5.0-10	1	1			
				1	MW-7-XX-XX		[1]Interval representative of total depth if not encountered above 10 feet	1	1			
MW- 8	30 (or refusal; if no refusal, 10 feet into apparent groundwater interface)	Surface soil		1	MW-8-0.0-0.5	Hollow stem auger with 5 ft core barrel	0.0 - 0.5	1	1		1	1
				1	MW-8-0.5-2.0		0.5 - 2.0	1	1			
		Subsurface soil			MW-8-2.0-5.0		2.0 - 5.0	1	1			
					MW-8-5.0-10.0		5.0-10	1	1			
				1	MW-8-XX-XX		[1]Interval representative of total depth if not encountered above 10 feet	1	1			

Table A-2: Sampling Design Matrix - Phase 2 Remedial investigation
Soil Sampling

Sample Location	Boring Total Depth (ft bgs)	Sample Medium	Rationale	Nunber of Sample Locations	Sample Identification	Sampling Tool	[1]Sampling Depth (ft bgs)	Analysis				
								TAL Metals (includes Mercury)	[2]Hexavalent Chromium	[2]PFCs	[2]ORP	[2]pH
MW- 9	30 (or refusal; if no refusal, 10 feet into apparent groundwater interface)	Surface soil		1	MW-9-0.0-0.5	Hollow stem auger with 5 ft core barrel	0.0 - 0.5	1	1			
				1	MW-9-0.5-2.0		0.5 - 2.0	1	1	1		
		Subsurface soil			MW-9-2.0-5.0		2.0 - 5.0	1	1	1		
					MW-9-5.0-10.0		5.0-10	1	1	1		
				1	MW-9-XX-XX		[1]Interval representative of total depth if not encountered above 10 feet	1	1	1	1	1
ACMW- 1	30 (or refusal; if no refusal, 10 feet into apparent groundwater interface)	Surface soil		1	ACMW-1-0.0-0.5	Hollow stem auger with 5 ft core barrel; if refusal, flight augers to target depth	0.0 - 0.5	1	1			
				1	ACMW-1-0.5-2.0		0.5 - 2.0	1	1			
		Subsurface soil		1	ACMW-1-2.0-5.0		2.0 - 5.0	1	1			
					ACMW-1-5.0-10.0		5.0 - 10	1	1			
				1	ACMW-1-10.0-15.0		10.0 - 15.0	1	1			
				1	ACMW-1-XX-XX		[1]Interval representative of total depth (sample may be from soil cuttings)	1	1			
ACMW- 2	30 (or refusal; if no refusal, 10 feet into apparent groundwater interface)	Surface soil		1	ACMW-2-0.0-0.5	Hollow stem auger with 5 ft core barrel; if refusal, flight augers to target depth	0.0 - 0.5	1	1			
				1	ACMW-2-0.5-2.0		0.5 - 2.0	1	1			
		Subsurface soil		1	ACMW-2-2.0-5.0		2.0 - 5.0	1	1		1	1
					ACMW-2-5.0-10.0		5.0 - 10	1	1			
				1	ACMW-2-10.0-15.0		10.0 - 15.0	1	1			
				1	ACMW-2-XX-XX		[1]Interval representative of total depth (sample may be from soil cuttings)	1	1			
Monitoring Well Soil Sample Subtotal								**42**	**42**	**4**	**5**	**5**
Soil Sample Total								**115**	**115**	**8**	**13**	**13**
Soil Investigation QC Samples												
Field Duplicates	NA	Soil	Quality Control	Same as original with "-D" added to the ID, for example MW-16-0.5-2.0-D		1 per 10 samples		12	12	1	2	2
MS/MSDs	NA	Soil		Same as original sample identification		1 per 20 samples (extra volume consisting of one container for MS and one container for MSD per each MS/MSD sample)		6	6	1		
								133	**133**	**10**	**15**	**15**

Table A-2: Sampling Design Matrix - Phase 2 Remedial investigation
Soil Sampling

Sample Location	Boring Total Depth (ft bgs)	Sample Medium	Rationale	Nunber of Sample Locations	Sample Identification	Sampling Tool	[1]Sampling Depth (ft bgs)	Analysis				
								TAL Metals (includes Mercury)	[2]Hexavalent Chromium	[2]PFCs	[2]ORP	[2]pH
Water QC Samples												
Field blanks	NA	Water	Quality Control	FB with number; for example FB-1, FB-2, etc.		1 per cooler containing equipment rinsate for equipment used during soil investigation				3		
Equipment blanks	NA	Water		ER with number; for example ER-1, ER-2, etc.		1 per day per set of nondedicated equipment per team		15	15	3		
								15	**15**	**6**	**0**	**0**

NOTES:

[1]Interval that contains the total depth will be determined in the field; these intervals will used accordingly the sample indentifcation number for the collected samples representative of this interval.

[2] As required, geotechnical parameters, hexavalent chromium, PFCs, pH , and ORP analyses for soil samples will be conducted by a private laboratory.

bgs = Below ground surface
ft = foot (feet)
FB = Field Blank
MS = Matrix spike
MSD = Matrix spike duplicate
NA = Not Applicable
ORP = Oxidation Reduction Potential
PFCs = Perfluorinated compounds
PVC = polyvinyl chloride
QC = Quality control
TAL = Target Analyte List

Objective of Sampling - To determine the nature and extent of contaminants of potential concern associated with surface and subsurface soil, and also determine anthropogenic/naturally occuring concentrations of contaminats of potential concern in offsite soil samples collected upslope from the site, in an area with the same soil type that

Activities to be Conducted - The tasks of this field investigation that will be performed during Phase 2 include: (1) Installation of soil borings and monitoring wells, (2) Completing a Background Soil Investigation, and (3) collection of surface and subsurface soil samples for laboratory analyses.

Sample Locations - See Figure A-2 for soil boring and monitoring well locations and A-3 for background soil sample locations in Appendix A of the Sampling and Analysis Plan Addendum.

N

0 50 100

Feet

Legend

- Proposed Soil Sample Locations for Phase 2 Soil Boring
- Proposed Phase 2 Surface Soil Only Locations
- Proposed Soil Sample Locations for Phase 2 Austin Chalk Monitoring Wells
- Proposed Soil Sample Locations for Phase 2 Perched Zone Monitoring Wells
- Monitoring Well
- Phase 1 RI Soil Sample Location
- Historical ERT Soil Sample Location
- Historical TCEQ Soil Sample Location
- Stream
- Stream Seasonal
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Barbed Wire Fence - fair to poor
- Chainlink
- Gate
- Approximate Site Boundary

Note:
RI: Remedial Investigation - Phase 1
ERT - US EPA Emergency Response Team
TCEQ - Texas Commision on Environmental Quality

Imagery Source:
Site:Texas Orthoimagery
Program 2015 0.5 Meter DOQQ,
Texas Strategic Mapping Program, 2015.

2016 -10-17 R:\Federal\EPA\RAC II\0162-Lane RI-FS_336\GIS\MXD\SAP\Figure A-2_rm.mxd EA-Dallas jbarratt

Lane Plating Works Inc. Superfund Site
Dallas, Dallas County, Texas

Figure A-2
Proposed Phase 2 Remedial Investigation Nature and Extent Soil Sample Locations

N

Lane Residence

Nearest Residence

Sumps

Electroplating Facility

WasteCon

Office

Waste Storage Shed

Bonnie View Road

Former Wastewater Treatment Building

Small Pond

Unnamed Stream

Stream

Legend

- Proposed Background Soil Boring Location
- Stream
- Stream Seasonal
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Barbed Wire Fence - fair to poor
- Chainlink
- Gate
- Approximate Site Boundary

0 50 100
Feet

Imagery Source: Texas Orthoimagery Program 2015 0.5 Meter DOQQ, Texas Strategic Mapping Program, 2015.

Lane Plating Works, Inc. Superfund Site
Dallas, Dallas County, Texas

Figure A-3
Proposed Phase 2 Remedial Investigation
Background Soil Investigation Sample Locations

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Table A-3: Sampling Design Matrix - Phase 2 Remedial investigation
Sediment Sampling

Sample Location	Boring Total Depth (ft bgs)	Sample Medium	Rationale	Nunber of Sample Locations	Sample Identification	Sampling Tool	Sampling Depth (ft bgs)	Analysis					
								TAL Metals (includes Mercury)	[1]Hexavalent Chromium	[1]AVS/SEM	[1]ORP	[1]pH	[1]TOC
Sediment Samples													
BLSED- 1	0.5	Sediment	Background Investigation for Upstream Sediment	1	BLSED-1-0.0-0.5	Core sampler or disposable scoop	0.0 - 0.5	1	1	1	1	1	1
BLSED- 2	0.5	Sediment		1	BLSED-2-0.0-0.5		0.0 - 0.5	1	1				
BLSED- 3	0.5	Sediment		1	BLSED-3-0.0-0.5		0.0 - 0.5	1	1				
BLSED- 4	0.5	Sediment		1	BLSED-4-0.0-0.5		0.0 - 0.5	1	1				
BLSED- 5	0.5	Sediment		1	BLSED-5-0.0-0.5		0.0 - 0.5	1	1	1	1	1	1
BLSED- 6	0.5	Sediment		1	BLSED-6-0.0-0.5		0.0 - 0.5	1	1				
BLSED- 7	0.5	Sediment		1	BLSED-7-0.0-0.5		0.0 - 0.5	1	1				
BLSED- 8	0.5	Sediment		1	BLSED-8-0.0-0.5		0.0 - 0.5	1	1				
								8	**8**	**2**	**2**	**2**	**2**
Sediment Investigation QC Samples													
Field Duplicates	NA	Sediment	Quality Control	Same as original with "-D" added to the ID, for example BLSED-1-0.0-0.5-D		1 per 10 samples		1	1	1	1	1	
MS/MSDs	NA	Sediment		Same as original sample identification		1 per 20 samples (extra volume consisting of one container for MS and one container for MSD per each MS/MSD sample)		1	1	1	1	1	
								10	**10**	**4**	**4**	**4**	**2**
Water QC Samples													
Equipment blanks	NA	Water		ER with number; for example ER-1, ER-2, etc.		1 per day per set of nondedicated equipment per team							
								0	**0**	**0**	**0**	**0**	**0**

NOTES:

[1] Hexavalent chromium, AVS/SEM, pH, ORP and TOC analyses for sediment samples will be conducted by a private laboratory.

AVS/SEM = Acid volatile sulfide/simultaneously extracted metals
bgs = Below ground surface
ft = foot (feet)
MS = Matrix spike
MSD = Matrix spike duplicate
NA = Not Applicable
ORP = Oxidation reduction potential
QC = Quality control
TAL = Target Analyte List
TOC = Total Organic Carbon

Objective of Sampling - To determine anthropogenic/naturally occuring concentrations of contaminats of potential concern in sediment samples collected upstream of the site.
Activities to be Conducted - The tasks of this field investigation that will be performed during Phase 2 include collection of sediment samples for laboratory analyses. These samples will be collected using sediment core samplers with disposable sleeves or laboratory-grade disposable scoops
Sample Locations - See Figure A-4 in Appendix A of the Sampling and Analysis Plan Addendum

Legend

- Proposed Phase 2 RI Background Sediment Sample Locations
- Phase 1 RI Sediment Sample Locations
- Historical TCEQ Sediment Sample Locations
- Stream
- Stream Seasonal
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Barbed Wire Fence - fair to poor
- Chainlink
- Gate
- Approximate Site Boundary

Note:
RI - Remedial Investigation - Phase 1
TCEQ - Texas Commision on Environmental Quality

Imagery Source:
Site:Texas Orthoimagery
Program 2015 0.5 Meter DOQQ,
Texas Strategic Mapping Program, 2015.

Lane Plating Works, Inc. Superfund Site
Dallas, Dallas County, Texas

Figure A-4
Proposed Phase 2 Remedial Investigation Background Sediment Investigation Sample Locations

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Table A-4: Sampling Design Matrix - Phase 2 Remedial Investigation
Surface Water Sampling

Sample Location	Sample Medium	Number of Sample Locations	Sample Identification	Sampling Tool	Sampling Depth [1]	Analyses for Surface Water Samples									
						Field Parameters	Total (Unfiltered) TAL Metals (includes Mercury)	Dissolved (Filtered) TAL Metals (includes Mercury)	Hexavalent Chromium	[2]Hardness	[2]Total Dissolved Solids	[2]Total Suspended Solids	[2]Alkalinity	[2]Total Organic Carbon	[2]Dissolved Organic Carbon
Surface Water Samples															
LSW- 1	Surface water at Sediment Sample Location	1	LSW-1	Peristaltic pump or disposable scoop	0.0 - 0.5 or shallower	1									1
LSW- 6	Surface water at Sediment Sample Location	1	LSW-6	Peristaltic pump or disposable scoop	0.0 - 0.5 or shallower	1									1
LSW- 9	Surface water at Sediment Sample Location	1	LSW-9	Peristaltic pump or disposable scoop	0.0 - 0.5 or shallower	1									1
LSW- 14	Surface water at Sediment Sample Location	1	LSW-14	Peristaltic pump or disposable scoop	0.0 - 0.5 or shallower	1									1
Background Surface Water Samples															
BLSW-1	Surface water at Sediment Sample Location	1	BLSW-1	Peristaltic pump or disposable scoop	0.0 - 0.5 or shallower	1	1	1	1						
BLSW-2	Surface water at Sediment Sample Location	1	BLSW-2	Peristaltic pump or disposable scoop	0.0 - 0.5 or shallower	1	1	1	1						
BLSW-3	Surface water at Sediment Sample Location	1	BLSW-3	Peristaltic pump or disposable scoop	0.0 - 0.5 or shallower	1	1	1	1	1	1	1	1	1	1
BLSW-4	Surface water at Sediment Sample Location	1	BLSW-4	Peristaltic pump or disposable scoop	0.0 - 0.5 or shallower	1	1	1	1						
BLSW-5	Surface water at Sediment Sample Location	1	BLSW-5	Peristaltic pump or disposable scoop	0.0 - 0.5 or shallower	1	1	1	1						
BLSW-6	Surface water at Sediment Sample Location	1	BLSW-6	Peristaltic pump or disposable scoop	0.0 - 0.5 or shallower	1	1	1	1						
BLSW-7	Surface water at Sediment Sample Location	1	BLSW-7	Peristaltic pump or disposable scoop	0.0 - 0.5 or shallower	1	1	1	1						
BLSW-8	Surface water at Sediment Sample Location	1	BLSW-8	Peristaltic pump or disposable scoop	0.0 - 0.5 or shallower	1	1	1	1						
					Total Surface Water Samples	**12**	**8**	**8**	**8**	**1**	**1**	**1**	**1**	**1**	**5**

Table A-4: Sampling Design Matrix - Phase 2 Remedial Investigation
Surface Water Sampling

Sample Location	Sample Medium	Number of Sample Locations	Sample Identification	Sampling Tool	Sampling Depth [1]	Analyses for Surface Water Samples									
						Field Parameters	Total (Unfiltered) TAL Metals (includes Mercury)	Dissolved (Filtered) TAL Metals (includes Mercury)	Hexavalent Chromium	[2]Hardness	[2]Total Dissolved Solids	[2]Total Suspended Solids	[2]Alkalinity	[2]Total Organic Carbon	[2]Dissolved Organic Carbon
Water QC Samples															
Field duplicates	Surface Water	Same as original with "-D" added to the ID, for example SW-7-D		1 per 10 samples			1	1	1	1	1	1	1	1	1
MS/MSDs	Surface Water	Same as original sample identification		1 per 20 samples (extra volume consisting of one container for MS and one container for MSD per each MS/MSD sample)			1	1	1	1	1	1	1	1	1
Trip blanks	Water	TB with number; for example TB-1, TB-2, etc.		1 per cooler containing aqueous samples for VOC analysis											
Equipment blanks	Water	ER with number; for example ER-1, ER-2, etc.		1 per day per set of for nondedicated equipment per team											
			Total Samples Including QC Samples			**12**	**10**	**10**	**10**	**3**	**3**	**3**	**3**	**3**	**7**

NOTES:

[1] Feet below water surface for surface water samples

[2] Hexavalent chromium, hardness, total dissolved solids, total suspended solids, alkalinity, total organic carbon, and dissolved organic carbon analyses for surface water samples will be conducted by a private laboratory.

Field parameters for surface water are pH, temperature, and conductivity, dissolved oxygen, and oxidation reduction potential.

MS = Matrix spike

MSD = Matrix spike duplicate

Objective of Sampling - To determine background conditons for surface water and collect addiitonal surface water parameters to develop a site-specific sceening level for aluminum.

Activities to be Conducted - The tasks of this field investigation that will be performed during Phase 2 include collection of additional surface water samples for laboratory analyses.

Sample Locations - See Figure A-5 in Appendix A pf the Sampling and Analysis Plan

N

0 150 300

Feet

Legend

- Proposed Phase 2 Background Surface Water Sample Location
- Water Parameters for Site-Specific Aluminum Criterion Development
- Historical TCEQ Surface Water Sample Location
- Stream
- Stream Seasonal
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Barbed Wire Fence - fair to poor
- Chainlink
- Gate
- Approximate Site Boundary

Note:
RI - Remedial Investigation - Phase 1
TCEQ - Texas Commision on Environmental Quality

Imagery Source:
Site:Texas Orthoimagery
Program 2015 0.5 Meter DOQQ,
Texas Strategic Mapping Program, 2015.

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Lane Plating Works, Inc. Superfund Site
Dallas, Dallas County, Texas

Figure A-5
Proposed Phase 2 Remedial Investigation Surface Water Sample Locations